

Patent Claims

1. An inhalation therapy device comprising
  - a. an aerosol membrane generator (2),
    - i. having a liquid storage container (4) into which a liquid (5) that can be used for therapy is fillable,
    - ii. having a membrane (6) which is connected on one side with the liquid storage container (4) such that a liquid (5) disposed in the liquid storage container contacts one side of said membrane (6), and
    - iii. having an oscillation generator (7) for generating oscillations by means of which a liquid (5) disposed in the liquid storage container is nebulised into an aerosol through openings in the membrane (6) to the other side of said membrane,
  - b. a mixing chamber (3) into which the aerosol membrane generator (2) generates the aerosol, and
  - c. an inhalation valve (20, 21) which allows the inflow of ambient air into the mixing chamber (3) during the inhalation phases and which prevents the aerosol from escaping from the mixing chamber (3) during the exhalation phases and which forms a wall section of said mixing chamber (3),
    - i. having an aerosol passage (22), via which the aerosol generated by the membrane generator arrives in the mixing chamber (3), said aerosol passage being disposed with one section on a surface of the aerosol membrane generator (2) so as to surround the membrane (3) along at least one sealing line (20a), and extending in an opening manner into the mixing chamber (3),
    - ii. having at least one breathing air through opening (23) disposed in the region around the aerosol passage (22), and
    - iii. having a valve element (21) disposed in the region around the aerosol passage (22) such that the valve element (21) closes the at least one breathing air through opening (23) in exhalation phases and opens it in inhalation phases.

2. Inhalation therapy device according to claim 1, characterised in that a plurality of breathing air through openings (23) are provided.
3. Inhalation therapy device according to claim 1 or 2, characterised in that a surrounding groove (24) is provided to retain the valve element (21).
4. Inhalation therapy device according to claim 3, characterised in that the valve element (21) comprises a bulge (26) for retention in the surrounding groove (24).
5. Inhalation therapy device according to one of claims 1 to 4, characterised in that the aerosol passage (22) is pipe-shaped and the valve element (21) is annular and said valve element (21) accommodates the pipe-shaped aerosol passage (22) in the annular opening.
6. Inhalation therapy device according to claim 5, characterised in that the surrounding groove (24) is provided to accommodate the valve element (21) in the outer surface of the pipe-shaped aerosol passage (22).
7. Inhalation therapy device according to one of claims 5 or 6, characterised in that the pipe-shaped aerosol passage is formed by a cylindrical sleeve (22), provided on the outer surface of which is a region accommodating the breathing air through openings (23), which extends essentially perpendicular to the longitudinal axis of the sleeve.
8. Inhalation therapy device according to claim 7, characterised in that the cylindrical sleeve (22) is disposed concentrically to the membrane (6).
9. Inhalation therapy device according to one of claims 7 or 8, characterised in that the valve element (21) is configured as a circular ring and accommodates the cylindrical sleeve (22) in the annular opening.
10. Inhalation therapy device according to one of the preceding claims, characterised in that the aerosol passage (22) comprises a bulge (22a) in the area facing the membrane.
11. Inhalation therapy device according to one of the preceding claims, characterised in that the one or more breathing air through openings (23) extend essentially parallel to the aerosol passage (22).

12. Inhalation therapy device according to one of the preceding claims 1 to 9, characterised in that the one or more breathing air through openings (23) extend in a spiral manner in relation to the aerosol passage (22).
13. Inhalation therapy device according to one of the preceding claims, characterised in that the one or more breathing air through openings (23) are configured as circular ring sections or segments.
14. Inhalation therapy device according to one of the preceding claims, characterised in that the inhalation valve (20) comprises an edge section (25) which is configured for retaining the inhalation valve (20), in particular for clamping between a wall (31) of the aerosol generator (2) and a wall (32) of the mixing chamber (3).
15. Inhalation therapy device according to one of the preceding claims, characterised in that the one or more breathing air through openings (23) are provided on all sides around the aerosol passage (22).
16. Inhalation therapy device according to one of the preceding claims, characterised in that the breathing air through openings (23) are designed to extend in a sloping manner such that the breathing air is guided away from the fixing point of the valve element (21).
17. Inhalation therapy device according to one of the preceding claims, characterised in that the region of the one or more breathing air through openings (23) is disposed essentially on a plane with the membrane (6).
18. Inhalation therapy device according to one of the preceding claims, characterised in that the valve element (21) is produced from a resilient material.
19. Inhalation therapy device according to one of the preceding claims, characterised in that the inhalation valve (20) is produced from a resilient material.